

# Policy and Legal Frameworks Governing Trees: Incentives or Disincentives for Smallholder Tree Planting Decisions in Cameroon?

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**Abstract** Agroforestry and planting trees on farmers' fields have been reported as important elements in a strategy to meet the millennium development goals of poverty reduction and climate change improvement. However, their uptake seems to be constrained by factors both internal and external to the household and related to the policy and legislative environment. This paper examines the impact of these factors on farmers' decisions to plant trees. Cameroon is used as a case to analyse whether existing policies and legislation governing trees support or discourage tree planting, using qualitative content analyses. Although their mission papers and statements suggest most national government policies in Cameroon address tree planting and agroforestry, actual legislation designed to follow up the policies mostly contradicts the poverty reduction goals. Often legislation and regulations are more conservation-oriented and do not provide a clear procedure to distinguish

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between products from trees found in the wild and those gathered from farmers' fields.

**Keywords** Agroforestry · Poverty reduction · Millennium development goals · Ecosystem services · Policies and legislation

## Introduction

It has been recognized that agroforestry technologies can contribute substantially to the achievement of the Millennium Development Goals (MDG) (Garrity 2004) at the core of which is eradicating extreme poverty (Schreckenberg et al. 2006a). These technologies can be used in rehabilitating degraded land (Asaah et al. 2011). Furthermore, agroforestry is gaining recognition in the climate change debate (Garrity 2004; Robiglio et al. 2010). For example, scientists in ASB (Alternatives to Slash and Burn Partnership for the Tropical Forest Margins) argue for a whole landscape approach—i.e. *Reducing Emissions from all Land Uses* (REALU)—as the most appropriate move towards reducing carbon emissions and providing co-benefits to local populations (Robiglio et al. 2010). However, when trees are concerned, much emphasis is still placed on forests (mostly natural regeneration) while it has been reported that even though forests are being severely degraded, the number of trees on farms is increasing and about 1.2 billion people are using agroforestry technologies (FAO 2005) to integrate trees into their production systems.

Integrating trees on farms and rangeland is within the concept of *agroforestry* and targets diversification and sustainability of agricultural production for increased social, economic and environmental benefits (Leakey 2011). Although reference is made to tree planting in general, the focus in this study is on indigenous fruit trees and farmers' fields. The main reason is that the principal actors who can create a positive contribution to tree planting are farmers (Westergren 1996) whereby their on-farm tree planting decisions are influenced by the market, food, medicinal, cultural and other social values of the tree species they would choose to plant (Westergren 1996; Garen et al. 2009).

Despite the social, economic and cultural importance of trees on farms and especially indigenous species (Schreckenberg et al. 2006a), they are poorly integrated in existing government policies dealing with poverty reduction (Schreckenberg et al. 2006b). In addition, research on agroforestry policies that include indigenous species is scarce. Consequently, most countries do not have policies that govern these trees on farmland nor specify how to deal with products from on-farm tree plantations. Typically these policies only pay attention to such exotic species as mangoes, avocados and citrus (Schreckenberg et al. 2006b) and other export species such as rubber and cocoa. On the other hand, trees on farmland especially indigenous species are subjected to policies and regulations from the forestry sector which are often highly normative (Westergren 1996; Schreckenberg et al. 2006a; Laird et al. 2010; Ndoye and Awono 2010). This has motivated the World Agroforestry Centre to encourage countries to develop specific agroforestry policies

as was discussed during the 23rd World Congress of the International Union of Forestry Research organisations (Langford 2010).

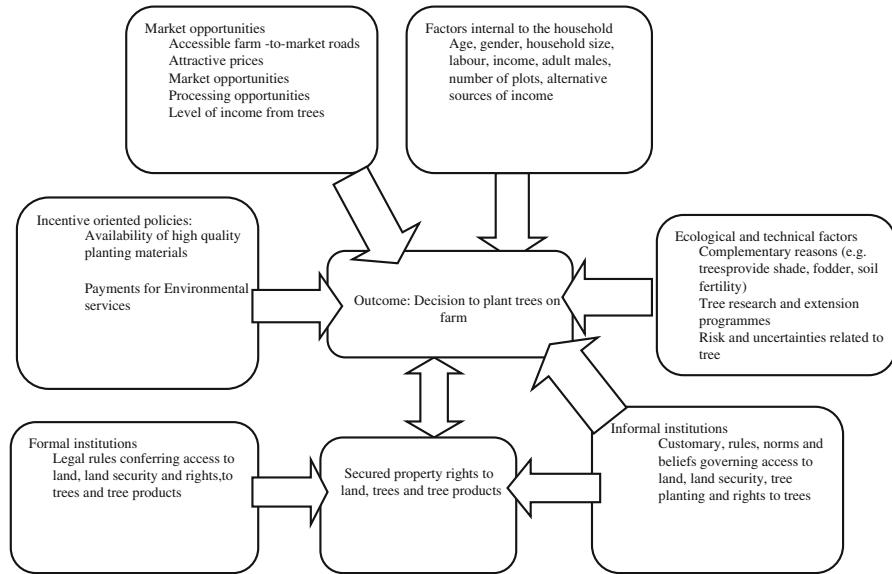
Leakey et al. (2005) made similar recommendations and some African countries including Kenya have taken the lead to develop special regulations for farm forestry (Government of Kenya 2009). Furthermore, FAO is interested in developing guidelines aimed at encouraging national decision-makers to promote agroforestry. The development of agroforestry measures is not limited to Africa. For example, the European Union (EU) under regulation 2080/92 developed forestry measures on-farm with specific programs to support afforestation activities, to improve existing woodlands and to reoccupy marginal lands. Even though the EU's principal objective is to reduce agricultural overproduction, it also recognises the contribution of forestry resources, in providing greater ecological balance and combating greenhouse gas effects by absorbing carbon (Lawson et al. 2002).

In the case of Cameroon, the justification to develop specific policies and legislation that address trees on farms and especially indigenous fruit trees is that many Agroforestry Tree Products (AFTP) produced by smallholders on-farm are from indigenous tree species and these species are also found in the wild. For example Degrande et al. (2006) found that 52 % of a total of 9,202 trees inventoried on farmers' fields in the humid forest zone of Cameroon were indigenous and 73 % of the 73 farmers interviewed would prefer to plant indigenous fruit trees compared to exotics. However, the legislation and regulation governing trees in Cameroon are enshrined within the 1994 forestry law and its 1995 text of application (Ngwasiri et al. 2002), and this law for the most part deals with indigenous species. Hence there exists a clear need to make a comprehensible distinction between the same products from trees found in the wild and on farmers' fields. However, new policy and legislative initiatives cannot be taken without a clear understanding of how existing policies may affect farmers' decisions to plant trees on-farm. In this regard the main question this research seeks to answer is whether existing policies and legislation governing trees in Cameroon provide incentives or discourage farmers from planting trees.

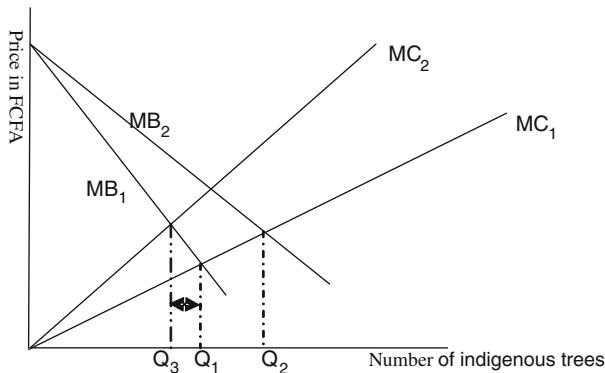
The study is designed to contribute to the current process of formulating specific public policies, legislation and regulations to govern the agroforestry sub-sector in Cameroon and other countries.

### **Conceptual Framework for Understanding Farmers Tree Planting Decisions**

The conceptual model applied examines factors that may affect farmers' tree planting decisions and explains why incentive-driven policies may add an additional impetus for tree planting (Figs. 1, 2). At the centre of the framework is the outcome: the rational-strategic decision of farmers to plant trees based on the highest expected individual benefits and lowest cost. The model depicts that the decision to plant trees is influenced by a number of factors that are either internal or external (the environment) to the household. Within the household, the age of the household head, the number of adult males, overall level of education of the farmer and amount of land owned are reported to influence the decision to plant trees (Knox et al. 2002; Zubair and Garforth 2006). Factors external to the household that may



**Fig. 1** Conceptual framework for analysing farmers' tree planting decisions



**Fig. 2** Effect of incentive-oriented policies on the number of trees planted. Note MB stands for marginal benefits, MC stands for marginal costs, Q denotes number of trees, and FCFA is the currency used in Central Africa (Fédérations des Communautés Francophones et Acadiennes)

trigger tree planting decisions include market opportunities for AFTPs, ecological and technical factors and the opportunity cost of tree planting. Farmers would plant more trees if the opportunity cost of forgone benefits on the land used were lower than the benefits derived from planting trees.

The rational farmers do not operate in a vacuum. Their activities are conditioned by a set of norms, rules and regulations defined as 'institutions' (North 1990). This means that the decision of the rational farmer to plant trees on a given piece of land is not only influenced by the highest expected utility, but also by what is possible within a given

*institutional environment* comprising the government policies and a conducive legal framework (both formal and informal). The policy and legal framework in this study refers to the whole set of political strategy or vision and regulations that establish the basis of production, exchange and distribution of trees and tree products in Cameroon.

As shown in Fig. 1, the household's internal factors, ecological and economic factors, and incentive-oriented policies act directly while those related to formal and informal rules and regulations may work both directly and indirectly. Direct, incentive-oriented policies such as provision of high quality planting material, improving AFTP quality, renewing aging plantations through tree domestication and vegetative propagation and paying for environmental services may encourage farmers to plant trees. Without incentive-oriented policies, a rational farmer with a particular plot size will plant a given number of trees, say  $Q_1$  (Fig. 2), to meet their personal, economic, cultural and ecological needs. This rational decision will take into consideration the potential alternative benefits from planting other types of plants to meet other economic and social needs. The marginal benefits ( $MB_1$ ) of planting one additional tree on any given piece of land decrease as more trees are planted. The farmer will thus compare the benefits of planting one extra tree to the benefits they will forego (opportunity cost of tree planting) by not planting another plant type on this land. Thus, farmers may plant more trees as long as the marginal benefits from doing so exceed marginal costs of not planting another plant type ( $MC_1$ ). For farmers to plant  $Q_2$  trees, it is argued that there should exist additional motivating factors beyond what they may obtain from their individual benefits. It is suggested that this additional stimulus may come from incentive-oriented policies which may include society's willingness to pay for environmental services, provision of an adequate number of well trained nursery operators to supply seedlings of high yielding tree species or varieties at affordable prices, or increase of value of indigenous fruit tree products through improved marketing. These incentive-oriented policies are expected to increase the competitiveness of indigenous fruit trees with regards to other plant species and will thus shift the marginal benefits to  $MB_2$ .

The rational farmer's choice is constrained by policies and regulations governing the agroforestry sector. This means that, depending on the way the policies and regulations are drafted, they may provide any combination of incentives, disincentives, sanctions or information to promote a particular type of behaviour (North 1990; Doward and Omamo 2009). In the context of this study, these institutions may be both formal and informal legislation and regulations that influence farmers' decisions to plant trees through their control on farmers' perceived (secured) property rights to land, trees and tree products. In the absence of clear property rights with regards to access to land and tree products, farmers will not take advantage of market opportunities. Also, in the absence of an adequate policy framework, transaction risks and costs will be high (Bienabe et al. 2004) and may further reduce farmers' and traders' motivation to plant and market trees and tree products. This means that if property rights (use and economic rights) to trees and tree products are supportive, they may also contribute to making on-farm tree planting more competitive, thus pushing the marginal benefits to  $MB_2$ . Otherwise, poorly defined rights may serve as a disincentive to on-farm tree planting, thereby pushing the marginal costs to  $MC_2$  leading to less trees on farm ( $Q_3$ ).

## Research Method

A qualitative content analysis was performed on policy statements, legislation and regulations of the responsible Government ministries and departments in the agriculture, forestry and environment sectors in Cameroon. Content analysis is defined as a technique for determining meaning by objectively and systematically identifying specified characteristics of messages (Holsti 1969). The methodological procedure is based on Stemler (2001), Mayers and Bass (2004) and Dlamini (2007), and is detailed as follows:

*Step 1* Inventory of existing national strategic documents, mission statements of competent ministries in charge of forestry, environment, agriculture and rural development in order to select relevant policy statements, laws and official texts that relate to trees, forests, environment and farmers' livelihoods that may either encourage or discourage tree planting on farmers' fields and other agroforestry initiatives (see Table 1 for list of documents analysed).

*Step 2* Although word frequency count is used widely in content analyses, the more advanced method used here condenses a great number of words of text into fewer content categories based on precise coding rules (Stemler 2001). The justification is that for stylistic reasons synonyms of some words may be used and this may lead to an under-estimation of some concepts. To overcome this problem, a more contextual approach to the meaning of some keywords is used. The context is whether the policy or legal statements serve as incentives or disincentives to tree planting. The keywords adopted are: NTFPs, agroforestry, trees, farms, conservation, sustainable management, planting materials, tree domestication, marketing and indigenous species. Based on this precept, a matrix of the selected policies and texts has been built to explore if the policy statements and legal text make mention of promoting NTFPs or AFTPs which can be interpreted as incentives for tree planting, or else directly discourage tree planting. A binary attribute of *yes* or *no* has been

**Table 1** National policies or programs relevant to poverty and rural development in Cameroon

National policy or program	Mentions elements of NTFPs <sup>a</sup> or AFTPs	Extent integration of trees on farm is addressed <sup>b</sup>
Poverty reduction strategic paper (PRSP)—(August, 2003)	Yes	1
Growth and employment strategic paper (GESP)—(August, 2009)	Yes	1
Rural development strategic paper (RDSP)—(undated)	Yes	2
Forest and environment sector program (PSFE)—(Dec, 2003)	Yes	0
National forestry policy—(June, 1995)	Yes	2
National agricultural policy—(May, 1999)	No	0
National NTFPs policy (mission statement)	n/a	n/a

<sup>a</sup> Non-timber forest products

<sup>b</sup> 0, not at all addressed; 1, inadequately addressed; 2, adequately addressed; n/a not available

used. If the policy is positively labelled through a yes, then another column within the matrix investigates if the issue of tree planting is adequately or inadequately addressed (see Table 1). An issue is

- adequately addressed, if the policy document or mission statement mentions and elaborates on action plans and implementation strategies regarding agroforestry, tree domestication and integration of trees on farm and is labelled 2;
- inadequately addressed implies the policy document or mission statement just mentions agroforestry and tree planting without further details on any implementation strategy and is labelled 1.
- not at all addressed if the policy document does not treat or include any element related to the integration of trees on farm, and is labelled 0.

*Step 3* The analyses have been designed to investigate what components of tree planting on farmers' fields and domestication of indigenous species and agroforestry are adequately or inadequately addressed. To do this, the policies and mission statements that received a *yes* (in matrix 1) were later scored again on another matrix. At this stage, the criteria of analyses modified and used elements of policy recommendations, emerging from the works of several authors including Westergren (1996), Ndoye et al. (1998), Garrity (2004), Russell and Franzel (2004), Simons and Leakey (2004), Degrande et al. (2006), Schreckenberg et al. (2006b), Tchoundjeu et al. (2006), Garen et al. (2009) geared at including agroforestry, AFTP, indigenous fruits and NTFPs in combating hunger and poverty (MDG 1). The policy recommendations are also aimed at reaching Cameroon's poverty reduction strategic paper (PRSP), the growth and employment strategy and other climate change mitigation issues. Some elements that are of policy advice (e.g. institutional support to improve market infrastructure) may extend to other sectors. For that reason, analyses were concentrated on those specific to the AFTP or NTFP subsectors. The elements of policy recommendation adopted are listed into four groups below.

#### Production and Sustainable Management

- A. The policy and legislation addresses production and distribution of planting materials of indigenous NTFPs or AFTPs.
- B. The policy and legislation encourages integration of trees on farm.

#### Access, Harvest and Post-harvest

- C. The policy and legislation gives usufruct rights to farmers
- D. The policy and legislation addresses harvest and post-harvest technologies
- E. The policy and legislation addresses sustainable management, production or domestication of indigenous species from the wild

## Marketing

- F. The policy and legislation confers economic rights on farmers
- G. The policy and legislation encourages marketing activities, farmer enterprises or research on marketing of indigenous tree products

## Research and Extension

- H. The policy and legislation or organisation addresses research on agroforestry or domestication of indigenous species
- I. The policy and legislation or organisation provides or makes provision for agroforestry incentives, access to planting material and extension services on tree planting

*Step 4* Inconsistencies were highlighted in the policy and legal documents in relation to meeting national development goals (poverty reduction strategic paper) and international development goals (specifically MDG1: poverty and hunger) and also general climate change mitigation objectives.

## Results

The various government policies, legislation and regulations are analysed in this section with a focus on their impact on farmers' tree-planting decisions. The results are then discussed, followed by conclusions and policy implications.

### Analysis of Policy Statements

Analysis of major government policy documents related to agricultural development, forestry and poverty alleviation reveals the commitment of the Government of Cameroon (GOC) to include elements of NTFPs and AFTP in its natural resources management and poverty reduction policies. This commitment is manifested in the country's 2003 poverty reduction strategic paper (PRSP), the 2008 Growth and Employment Strategic Paper (GESP) which replaced the previous PRSPs, the Rural Development Strategic Paper (RDSP) and the National Forestry Policy (Table 2). In all these documents, GOC identifies managing natural resources in a sustainable way as one of the four pillars to diversify and raise income in rural areas. Of these documents, the Rural Development Strategic Paper and the National Forestry Policy rate highest in addressing agroforestry through on-farm integration of indigenous species as one of the options to support farming development, in order to boost production, diversify rural income and maintain the natural resource base (Table 2). These two policy documents also emphasise the importance of promoting agroforestry-based production systems by integrating trees on-farm to improve soil fertility.

**Table 2** Scoring matrix for relevant policies in relation to trees on farm

Policy or legislation	A	B	C	D	E	F	G	Total score
PRSP	1	1	0	0	1	0	0	2/7
GESP	1	0	1	1	0	0	0	3/7
RDSP	1	1	1	1	1	1	0	6/7
PSFE	1	1	1	1	1	1	0	7/7
National forestry policy	1	1	1	1	1	1	1	7/7
National agricultural policy	1	1	0	0	0	0	0	2/7
National NTFPs policy <sup>a</sup>	n/a							
Total	6/6	5/6	4/6	4/6	4/6	3/6	1/6	

A, The policy, legislation or organisation mentions or encourages tree planting in general; Yes = 1, 0 otherwise

B, The policy, legislation or organisation mentions domestication or agroforestry or encourages the planting of indigenous species on farmers' field; Yes = 1, 0 otherwise

C, The policy, legislation or organisation gives or encourages usufruct rights to farmers Yes = 1; 0 otherwise

D, The policy, legislation or organisation gives economic rights to farmers Yes = 1; 0 otherwise

E, The policy, legislation or organisation encourages farmer enterprises, on indigenous NTFPs or AFTP<sup>s</sup> Yes = 1; 0 otherwise

F, The policy, legislation or organisation encourages research on indigenous, NTFPs or AFTP<sup>s</sup> Yes = 1; 0 otherwise

G, The policy, legislation or organisation makes mention/encourages production/distribution of indigenous NTFPs or AFTP<sup>s</sup> planting materials Yes = 1; 0 otherwise

<sup>a</sup> n/a means no information available

The national agricultural policy does not use the agroforestry terminology but elaborates on the development of some major cash crops (coffee, cocoa, rubber, oil palm) designed for promoting exports in the national agricultural diversification strategy. Although these efforts again reflect the intent of the GOC to include trees, AFTP<sup>s</sup> and related agroforestry technologies in its poverty reduction strategy, it should be noted that the national agricultural policy neglects indigenous species which are targets for tree domestication and confirms common knowledge that these species are overlooked by the ministry in charge of agricultural development. Unlike for other crops including maize, cotton, rubber, roots and tubers, cocoa, coffee and sugarcane, for which specific directives exist in the national agricultural policy, none directives exist for indigenous fruit species such as *Irvingia gabonensis* (bush mango), *Dacryodes edulis* (safou) or *Ricinodendron heudelotii* (njansang). The assumption of this is that due to the lack of appropriate policy from the agriculture ministry, indigenous fruits species are in reality highly regulated by the forestry department.

Both national forestry policy and its institutional support instrument, the PSFE, address most of the elements of policy recommendations identified from the existing literature. However, Fig. 1 reveals that efforts are still needed to tackle the availability, accessibility and affordability of improved planting materials for indigenous trees.

## Legislation Governing Trees and Other Forest Products in Cameroon

The latest legislation governing the forestry sector in Cameroon is the *1994 Forestry Law* and its decree of application (Ngwasiri et al. 2002). In the absence of separate laws governing trees on farmers' fields and the NTFP sector in Cameroon, some elements in the 1994 *Forestry Law* address NTFPs and indirectly affect the planting and management of trees in other farming systems. The emphasis in analysing this legislation is placed on the following elements: clear definition of what is meant by forests and forestry and agricultural products; ownership and access to forest resources (with emphases on NTFPs); their exploitation for personal and commercial uses; and how they may affect trees outside forests and the decision to plant trees. Section 6 of the 1994 forestry law states that rights to trees are also restricted by the regulations governing land tenure and state land.

### *Definition of Forests, Non Timber Forests Products and Agroforestry Products*

Section 2 and section 9 of the *1994 Forestry Law* respectively define forests and forests products and emphasise that forest products are different from agricultural products. The law defines forest products as 'mainly wood and non-wood products as well as wildlife and fishery resources derived from forests'. The law, however, fails to define what agricultural products are, nor does the competent Ministry of Agriculture in Cameroon provide any formal definition of agricultural products. The implication of this unclear definition is that confusion arises as to whether products harvested from farm trees shall be considered as agricultural products or forestry products. Similar questions have been posed by Belcher (2003) who questioned whether a given product is a NTFP even if it is derived from a farming system and thus subjected to the same regulations as NTFPs products gathered from the wild. The reality in the field is that forest officials harass producers and especially traders who deal in such products based on forestry regulations, this practice being common for example in the case of *Cola* spp. and *Irvingia gabonensis*.

### *Laws and Regulations Related to Land in Cameroon*

Land and tree tenure rights have been identified as important factors that affect everyday decisions of farmers as to what crops to grow, the type of investments to make and the adoption of new and promising agricultural technologies for climate change mitigation amongst which agroforestry (Knox et al. 2002; IFAD 2008). In Cameroon, specific provisions of the 1994 forestry law—for example ownership of forests and aquaculture establishments—refer to the regulations governing land tenure and state land. Rights to land in Cameroon are torn between traditional property rights and modern laws (Tchapmégny 2007).

*The traditional property or customary land tenure system* varies between regions and between ethnic groups (Schreckenberg et al. 2002; Tchapmégny 2007; African Development Bank 2009; Oyono 2009). In pre-colonial times, land in Cameroon was perceived as community property and was handed down from one generation to another. It was thus difficult to talk about private ownership of land during this time.

*Formal rights* to land by individuals were introduced during the colonial period. Cameroon has gone through German, French and British colonial regimes. Consequently, the current legislation and regulatory framework (ordinances N°74-1 and N°74-2 of the 6th of July 1974) are influenced by these colonial masters (African Development Bank 2009). The 1974 law also created a framework for private ownership of land sanctioned by registration and a title. Following the law, the customary rights (use rights) give the possibility to occupants of national land to register a piece of land and receive private ownership. Unfortunately, due to the complicated procedures involved in obtaining land certificates (van den Berg and Biesbrouck 2000), many Cameroonian have resorted to using the traditional or customary system to acquire land, especially in rural areas. The complicated procedures involved may explain why only 2 % of the Cameroonian territory has been issued with land certificates (African Development Bank 2009). For rural land, only approximately 3 % has been registered and in most cases by owners of large commercial farms. Small-scale farmers who usually secure land under local agreements have difficulty taking advantage of the opportunity presented by the law.

### Possible Impact of Current Legislation on Farmers' and Traders' Decisions: A Theoretical Analysis

An assessment of the legislation governing trees in Cameroon (1994 Forestry Law and the 1974 ordinance on land tenure) reveals that it potentially limits smallholder producers' economic rights to exploit NTFPs and in reality limit their rights to the trees they plant on their farms:

#### *Usufruct and Economic Rights to Exploit and Sell NTFPs*

Ngwasiri et al. (2002) elucidated access rights for local people based on the 1994 forestry law and the 1995 decree of application. Based on their analyses, local populations are conferred usufruct rights which constitute the right to exploit NTFPs for personal use, but not for commercial purposes. On the other hand, some NTFPs are defined as *special products* in the law (section 9 (2)), meaning that interested parties are expected to obtain permits to exploit such special products. To obtain these permits, interested parties have to go through the same procedures as those dealing in commercial timber exploitation. Because the whole concept of NTFPs is poorly defined, the laws meant to govern the forestry sector impact directly on the same species found on farmers' fields (AFTP). The resultant effect is that farmers' property rights are poorly defined as the products which come from their farmland are *subjected to forestry legislation and regulations*. This means that policy-makers need to enact subsequent legislation and regulations to adapt to current shifts in agricultural and conservation practices where originally wild trees are now planted on farm.

#### *Rights to Trees*

Following the 1994 *Forestry Law*, trees planted on land without a title deed belong to the state. Also, all naturally growing trees belong to the state even if they grow on

cultivated land. In other words, trees growing on private land will only be considered property of the individual if the person claiming rights to the trees has a deed. This means that if the laws were to be properly enforced, most farmers would lose their rights to the trees on the land for which they are claiming ownership under customary rules. The 1994 forestry law also stipulates that owners of private forest need to draw up management plans with regards to the trees they plant. The law clearly states that orchards are excluded from forest, but no provisions were identified to differentiate between these or to define what an orchard is, nor did they distinguish between products harvested from orchards and those from the wild. The procedures to obtain management plans to exploit own-trees incur both transaction and operational costs and can serve as disincentives to farmers planting trees on private land.

Although the law in Cameroon confers the right on every citizen to own land, some customary regimes limit this right for women and some social groups including livestock breeders in some nomadic areas. In the Northwest region of Cameroon (for example) only 3.2 % of registered land certificates representing 0.1 % of all registered land surface belong to women (African Development Bank 2009). This customary regime may thus have a negative effect on women's rights and their ambitions to plant trees. However, these customs are dynamic and may not necessarily stop women from planting trees if they are exposed to opportunities. For example, ICRAF experience reveals that women in Ngali II (a village in the south of Cameroon) actually planted *Irvingia* spp. on their farms when they were introduced by research into tree domestication techniques.

## Discussion

It is clear that no mechanism, laws nor regulations exist that identify or separate species harvested from the wild from those that could also be found on farmers' fields in Cameroon. If the existing laws were properly enforced, they could be disincentives for farmers to plant those highly regulated species on their farmland. This argument is supported by an example in Indonesia where export restriction for raw materials officially designed to protect natural rattan stands, resulted in the total collapse of their cultivation (Fried 2000). Another Indonesian example is that harsh policies concerning sandalwood collection on the Island of Timor forced local people to start uprooting the species that had generated naturally on their land (Michon 2005). In Nepal, there is evidence that that the government imposes a levy whenever it becomes aware of a NTFP's utility, and when farmers become aware of these changes they lose interest in investing in the products (Gautam and Devoe 2002). In Cameroon, a similar case was documented in the ministerial decisions of 2005 that listed products classified as forests products of special interests to the state; two species (*Aniegeria* Spp. and *Eucalyptus* Spp.) were added in 2006 restricting their exploitation. This conservation measure may have the unintended negative consequence that farmers in Cameroon will no longer invest in these species and others on their farm. This may be a major setback to the income diversification strategy as defined in the RDSP, especially as ASB (1998) reported

that cocoa farms in Cameroon enriched with fruit trees (indigenous and exotic) can increase revenue from cocoa farms by up to USD 500 per year.

Existing legislation and regulations in Cameroon are unclear and allow forest and police officials to seek rent from traders in the form of bribes and other informal taxes. Ndoye and Awono (2010) estimated these informal taxes for a car transporting 1.5 tons of *Gnetum* spp from the Centre region to Idenau in the Southwest region (distance of about 450 km) to be about 530 USD. This rent-capture may prevent new traders from establishing and discourage existing traders from expanding on their operations. Also, the traders may be forced to pass on the extra charges in the form of lower purchase prices to farmers and higher selling prices to consumers (Ndoye 2005). A clear distinction between AFTP<sup>s</sup> and NFTP<sup>s</sup> in legislation would decrease the rent-seeking behaviour of forest and police officials and increase farmers' incentives to formally harvest, handle and process the products, eventually leading to an increase in Government revenues (Schreckenberg et al. 2006a).

To avoid confusion between NFTP<sup>s</sup> collected from the wild and from framers' fields, scientists at the World Agroforestry Centre working on tree domestication and agroforestry propose and use the term *AgroForestry Tree Products* (AFTP<sup>s</sup>) to identify timber and non-timber forest products that are harvested from trees cultivated outside forests, distinguishing them from NFTP<sup>s</sup> extracted from natural systems (Simons and Leakey 2004). Subsequent legislation can thus adopt this definition and further introduce certificates of origin to differentiate products from trees from agroforestry systems from those that are collected from the wild.

Because Cameroon law implies that trees planted on land without a title deed belong to the state, the law can be viewed as a disincentive to tree planting. However, empirical evidence on the relationship between tenure security (especially measured by land title) and tree planting in Sub-Saharan areas has been contradictory and where proven, the evidence has not been sufficiently robust and widespread (Bromley 2008; Arnot et al. 2011).

## Conclusions and Policy Implications

It can be concluded from the Cameroon case study that despite good intentions to include agroforestry in most rural development programs, the multiple locations of trees across various land uses in Cameroon may favour contradictory policies and legislation. Westergren (1996), for example, argued that the variety of names defining trees on farms is a reflection of the confusion among laymen and experts concerning the possibilities of traditional forestry to intervene on land where agriculture plays a dominant role. This suggests that trees outside forests may be under the control of forestry or agricultural legislation or a combination of both, or may be totally ignored by either or both. The Cameroon case reflects a neglect of indigenous species by both the forest and agriculture ministries and demonstrates the need for an inter-ministerial committee to revise existing laws and regulations governing cultivation of indigenous trees on farms. This committee should also include representative from the department of land tenure because beside forest

regulations, land tenure regulations affect decisions to plant trees and rights to trees. This inter-ministerial committee should recognise that the exploitation, transport, import and export of indigenous fruit crops from farmers' fields do not pose any threat to conservation (Schreckenberg et al. 2006b), suggesting that those agroforestry products should be treated like conventional farm products. However, the policies and legislation should distinguish species from which harvesting practices are a threat to sustainability, such as *Prunus africana* and *Gnetum* species.

In designing policies for indigenous trees on farms, policy makers should consider that: (1) most NTFPs in the wild with high economic value have the potential of being planted on farmers' fields in the medium to near future as research is currently developing technologies to domesticate them, and (2) most development projects in the field of climate change (REDD and REDD+) may encourage tree planting by farmers. Thus, a boundary needs to be set to define when a product ceases to be a forest product and becomes an agricultural product. In this context, it is proposed that the inter-ministerial committee considering the revision of laws governing trees in Cameroon should not only consist of foresters with strong drive towards conservation as was the case with the 1994 *Forestry Law* (Ekoko 2000), but also of experts in the agricultural field as well as in land tenure and climate change. The agricultural experts would thus provide insights on an appropriate definition of agricultural products and agroforestry, identify the most productive ways to introduce trees on farm in order to guarantee product quantity and quality, as well as improve the competitiveness of agroforestry as an appropriate land-use system for farmers.

In order to encourage farmers to plant trees, the law would also need to make provision for incentive mechanisms such as making planting materials more accessible to farmers or some form of payments for environmental services. Evidence of incentive-oriented policies are reported from Europe, where policies such as direct aid for afforestation, direct aid for the first 5 years of plantation maintenance, compensatory payments for a farmer's loss of income have contributed in the afforestation of one million hectares of agricultural land within a period of 5 years (Lawson et al. 2002). In cases where farmers do not need to plant indigenous fruit trees because they naturally grow in existing farming systems, policies can be designed to encourage farmers to retain and manage these trees. Government support for farmer-managed regeneration of indigenous trees on agricultural land implemented by the Government of Niger and international NGOs has resulted in the spread of indigenous trees on more than 5 M ha (Haglund et al. 2011).

Because it is difficult to differentiate fruits harvested from the wild from those harvested from farmers' fields, there is a need for forest and agricultural extension services with research support to facilitate certificates of origin based on the distribution of the resource as either wild or from farmers' fields. In the long run, through the continued efforts of tree domestication research to develop high quality planting materials with high market potential, fruit from trees on farmers' fields may out-compete wild fruit as harvesting costs are reduced and the fruit quality becomes more uniform and higher. This would reduce the pressure on natural stands, thereby also meeting conservation objectives.

## Suggestions for Further Research

Most of the conclusions drawn in this study stem from examining laws and regulations as they exist and are currently being applied in Cameroon. However, there are no studies that provide any empirical evidence about farmers' awareness and perception of these regulations, and a study of these is warranted. The principal research question in this case will be whether Cameroonian farmers are aware of existing legislation and whether properly enforced regulations would affect their tree planting decisions. Another interesting research question is whether farmers are willing to accept certificates of origin to distinguish farm trees from wild ones. It would also be interesting to know if any of the group of factors as described in the conceptual framework is more important than others in determining farmers' tree planting behaviour. Such information can be useful in guiding policy-makers to prioritise their interventions.

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